

(19) 世界知的所有権機関
国際事務局(43) 国際公開日
2003 年 10 月 9 日 (09.10.2003)

PCT

(10) 国際公開番号
WO 03/083157 A1

- (51) 国際特許分類⁷: C23C 8/24, C22C 27/04
- (21) 国際出願番号: PCT/JP03/03912
- (22) 国際出願日: 2003 年 3 月 27 日 (27.03.2003)
- (25) 国際出願の言語: 日本語
- (26) 国際公開の言語: 日本語
- (30) 優先権データ:
特願2002-98039 2002 年 3 月 29 日 (29.03.2002) JP
- (71) 出願人 (米国を除く全ての指定国について): 科学技術振興事業団 (JAPAN SCIENCE AND TECHNOLOGY CORPORATION) [JP/JP]; 〒332-0012 埼玉県川

口市 本町4-1-8 Saitama (JP). 岡山大学長が代表する日本国 (JAPAN AS REPRESENTED BY DIRECTOR GENERAL OF OKAYAMA UNIVERSITY) [JP/JP]; 〒700-8530 岡山県 岡山市 津島中3-1-1 Okayama (JP). 株式会社アライドマテリアル (A.L.M.T.CORP.) [JP/JP]; 〒110-0014 東京都 台東区 北上野二丁目23番5号 Tokyo (JP).

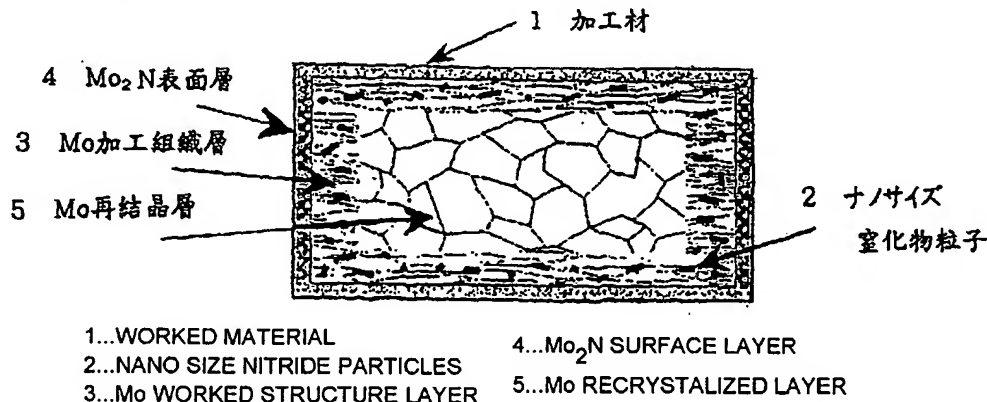
(72) 発明者; および

(75) 発明者/出願人 (米国についてのみ): 高田 潤 (TAKADA, Jun) [JP/JP]; 〒703-8243 岡山県 岡山市 清水1-14-10 Okayama (JP). 長江 正寛 (NAGAE, Masahiro) [JP/JP]; 〒706-0012 岡山県 玉野市 玉2-12-21 Okayama (JP). 中西 真 (NAKANISHI, Makoto) [JP/JP]; 〒700-0011 岡山県 岡山市 学南町3-3-30 山田コーポ

[続葉有]

(54) Title: NITRIDED Mo ALLOY WORKED MATERIAL HAVING HIGH CORROSION RESISTANCE, HIGH STRENGTH AND HIGH TOUGHNESS AND METHOD FOR PRODUCTION THEREOF

(54) 発明の名称: 高耐食性・高強度・高靱性窒化処理Mo合金加工材とその製造方法



(57) Abstract: A nitrided Mo alloy worked material having high corrosion resistance, high strength and high toughness, characterized in that it comprises a base Mo alloy worked material and, dispersed in the inside thereof, fine nitride particles having been formed by the nitriding of a metal element capable of forming a nitride present in the inside of the Mo alloy worked material and, formed on the surface thereof, a Mo nitride layer having been formed by the nitriding of a worked structure or a recovered structure on the surface; and a method for producing the nitrided Mo alloy worked material which comprises subjecting an alloy worked material containing Mo as a base phase and at least one of Ti, Zr, Hf, V, Nb and Ta as a solute of a solid solution to an internal nitriding with gradually elevating temperatures, and then subjecting the resultant product to an external nitriding. The nitrided Mo alloy worked material is novel and exhibits satisfactorily high corrosion resistance and a high strength under an ultra-severe conditions, such as in a boiled conc. sulfuric acid solution (for example, an aqueous 75 % H₂SO₄ solution at 180°C), and further, has a high strength at an elevated temperature and also a high toughness at a low temperature, which properties have never seen in the conventional materials.

(57) 要約: 沸騰濃硫酸溶液 (例: 75% H₂SO₄ 水溶液 (180°C)) など超苛酷腐食条件下でも十分に高耐食性および高強度を示し、その上、高温においても高強度で、かつ低温でも高靱性を有するこれまでにない物性を合わせ持つ革新的材料とその効率的な製造方法の提供。 Mo合金加工材中に固溶した窒化物形成金属元素が内部窒化されて生成した微細窒化

[続葉有]

INTERNATIONAL SEARCH REPORT

International Application No.

PC1/P03/03912

Rec'd PCT/JP 28 SEP 2004
10/509156

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ C23C8/24, C22C27/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ C23C8/24, C22C27/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Toroku Jitsuyo Shinan Koho	1994-2003
Kokai Jitsuyo Shinan Koho	1971-2003	Jitsuyo Shinan Toroku Koho	1996-2003

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 01/18276 A1 (Japan Science and Technology Corp.), 15 March, 2001 (15.03.01), & KR 2040739 A & EP 1219722 A1	1-6
A	JP 59-208066 A (Toshiba Corp.), 26 November, 1984 (26.11.84), (Family: none)	1-6
A	JP 11-286770 A (Takashi YOSHIOKA), 19 October, 1999 (19.10.99), (Family: none)	1-6

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
27 June, 2003 (27.06.03)Date of mailing of the international search report
15 July, 2003 (15.07.03)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.